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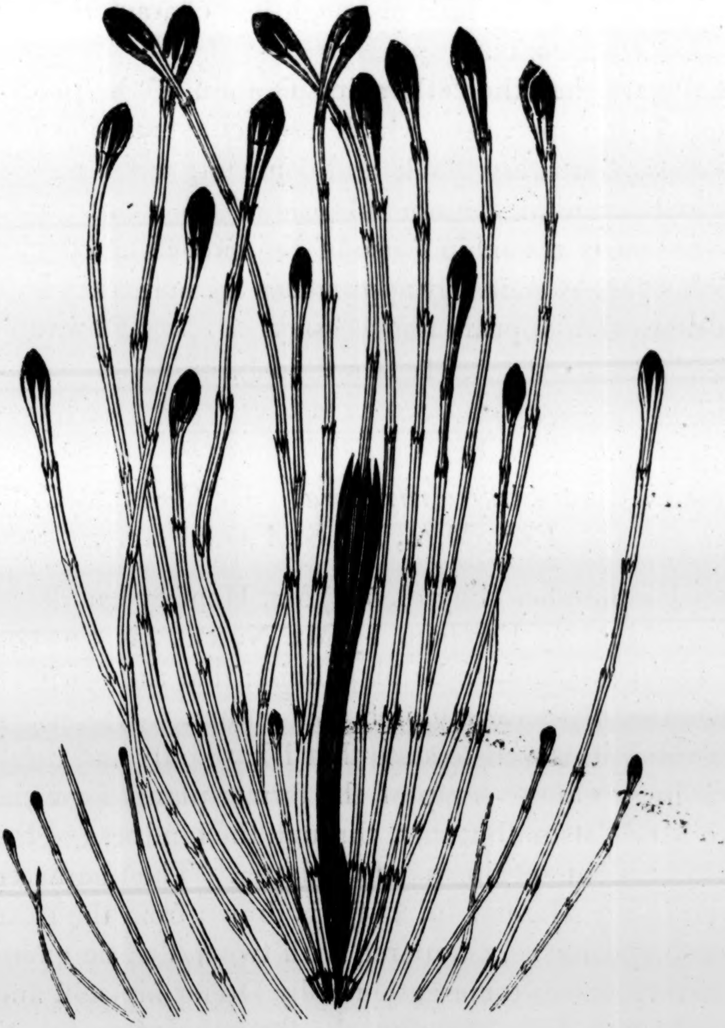
ART. CXLIII.—*A History of the British Equiseta.* By EDWARD NEWMAN. (Continued from p. 535).



EQUISETUM PALUSTRE, VAR. POLYSTACHION.

THE variety of Equisetum palustre which appears to be universally known by the name of *polystachion*, is at once distinguished by its numerous catkins; these are usually and principally borne on the two upper whorls of branches: the main stem generally terminating in a catkin of uniform size with the others, as represented in the figure, which is drawn from an exceedingly beautiful specimen, kindly lent me by Miss Griffiths. At other times the stem bears a catkin of the normal size and form, while those on the branches are comparatively diminutive in size; for specimens of the latter form I am indebted to several kind correspondents, particularly to Mr. Ashworth of Manchester.

Dillenius, in Ray's Synopsis,* gives a very faithful figure of this variety; and several decided although less characteristic figures may be found in other works.

I may remark that the catkins in this form of the plant are usually small, and in the specimens which have come more especially under my notice, they are very black and compact, much more so than the single apical catkin of the normal form of the plant, and hence they much more nearly resemble those of the preceding species: in other respects this variety so nearly approaches the normal form, that a more minute description appears unnecessary. EDWARD NEWMAN.

(To be continued).

ART. CXLIV.—*On Statice rariflora.* By CHARLES C. BABINGTON, Esq., M.A., F.L.S., F.G.S., &c.

IN your last number (Phytol. 561) Mr. Henfrey has determined that the Statice found at Fareham by Mr. Notcutt, is the S. rariflora of Drejer; but he states it to be his opinion that the Garlieston plant is different, and only a variety of S. Limonium. Under these circumstances I think it as well to state that I have only had the opportunity of examining a minute scrap of the former plant, for which I am indebted to Mr. Watson, but that, through the kindness of Prof. Balfour, I possess excellent specimens of the latter. The character of S. rariflora given in my Manual (p. 244), is drawn from the examination of the Scottish specimens, compared with two authentic examples of the Danish plant; one of them gathered by Drejer himself, and presented to me by M. Sonder of Hamburgh, the other forming No. 2200 of Reich. Fl. Exsic., collected by Steenberg and authenticated by Drejer. Both these specimens are small, and have leaves mostly resembling those of fig. 1, (Phytol. 561); whilst the Scottish plant usually has long leaves, similar to fig. 5. There is, however, amongst those sent me by my friend Balfour, one dwarf specimen, agreeing *in every respect* with those from Denmark, in one of which some of the leaves are considerably lengthened in proportion to their breadth, whilst the Scottish specimen referred to has a leaf (it only possesses two) even more ovate-spathulate than in Mr. Henfrey's fig. 1. It is therefore evident that the exact form of the leaves cannot be considered as a certain character. The calyx appears to me to be precisely similar in the Scottish and Danish plants, not differing materially from that of S. Limonium; for I fear that the want of denticulations, upon which I have laid some stress in my Manual, will not prove to be a constant character. A reference to the original descriptions, namely, that of Drejer in the Fl. Hafn. 121, or of Fries, who gives it as a probable species requiring examination, under the name of S. Limonium Bahusiensis, in his Mant. Prima, 10, will show that no great stress is laid by those distinguished botanists upon the form of the leaves or upon the calyx, but that the specific definition is founded upon the peculiar inflorescence, which is remarkably different in the two plants. In S. Limonium the stalk is simple in the lower part, scarcely ever dividing below the middle, the branches are very much divided and corymbose, and curved outwards into a horizontal or even deflexed position, the ultimate divisions are very short, with numerous closely-placed subimbricated flowers. This is the S. Limonium Scanica of Fries (Mant. Prima, 10), the S. Behen of Drejer (Fl. Hafn. 122), S. Limonium, Eng. Bot. 102. On the other hand, in S. rariflora the stalk is often divided far below the middle, but the branches are less compound, not at all corymbose, and rather curve inwards and upwards than outwards and downwards, the ultimate divisions are elongated and the flowers are at a considerable distance from each other.

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* Syn. t. 5, f. 3.

Having, as I trust, shown that the Scottish plant is the true S. rariflora, it remains to be determined if the Fareham plant is or is not the same; and I must confess that the acute outer bracts and very narrow calyx-segments now lead me to suspect that it may prove different, in which case it will have to be identified with some continental species, or obtain a name as new. It is right to add, that I have reason to fear having been the misleader of both Mr. Watson and Mr. Henfrey, as (if I mistake not) the suggestion that Drejer's name was applicable to both the Scottish and English specimens originated with me; still I trust that pardon will be extended to me, in consideration of the fact that Mr. Watson intimated it to be his opinion that the plants were identical, and that although possessing good Scottish specimens, my example of the Fareham plant consists of five flowers and an inch of stalk. I of course therefore drew my ideas of the species from the Scottish plant.

CHARLES C. BABINGTON.

St. John's Coll. Cambridge,
May 6, 1843.

ART. CXLV. — *A Flora of the Neighbourhood of Sandringham, Norfolk.* By JAMES E. MOXON, Esq.

SANDRINGHAM, a hamlet of western Norfolk, situate about seven miles to the northward of Lynn Regis, and intermediate between Castle Rising and Snettisham, offers many inducements to the botanist on account of the number and interest of the productions of its vicinity, mainly attributable to the variety of soils and situations.

The geological features of this part of England are somewhat peculiar. Firstly, there is the chalk; which, after traversing various counties from Sussex, and being broken in upon by the extensive fens and marshes of Cambridgeshire, and of that part of Norfolk, denominated "marshland," again appears in the neighbourhood of Downham, and, occupying the most elevated portions of this part of the county, terminates at Hunstanton, its north-western extremity, situated at the entrance of the Wash, an extensive inlet of the German Ocean. Secondly, the silt, a marine deposit, occupying all the lower parts and valleys along the coast, and extending in some instances to a considerable distance inland. And thirdly, between this latter and the chalk, occurs the greensand formation, also a continuation of the Sussex beds, and terminating likewise at Hunstanton. Behind the chalk, a series of non-fossiliferous marls and clays extends in the direction of the interior of the county. In addition to this series of strata, the immediate neighbourhood of Sandringham offers a variety of localities. Heath, fen, marsh, woods, cultivated lands, meadows and hedge-rows, all nourishing their peculiar species, are spread around. Add to this the variety of soils; sand, clay, marl, loam, chalk and gravel, and likewise the sea-shore, shingly, sandy, and muddy; the salt marshes and ditches at Wolferton, Babingley &c.; and the river at Castle Rising; — all combine to render this a district abounding alike in rare and uncommon plants, as (considering its limits) in the number of species. Nor is this all; for lastly, the undulating character of the country in general, adds further to all these desiderata.

The size of the district examined, and to which the accompanying catalogue solely applies, is included within a radius of about three miles from Sandringham church. The following are its boundaries:—Northwards, Snettisham; East, the Fring and Harpley road, Anmer, Flitcham, Hillington, Congham; South, Roydon (including the fen), Wootton-heath and North Wootton; and to the West, the sea-coast as far north as Caen-hill wood, near Snettisham.

To avoid a more lengthened description, the nature of its general surface and the predominating vegetation, may be concisely defined as follows.

Divisions of Surface.	Area in Square Miles.	Character.	Predominant Vegetation.
1. Seashore (beyond the sea bank)	1¼	Stony, sandy, muddy.	Triticum repens, Salicornia herbacea, Atriplex portulacoides, Silene maritima, Glaucium luteum.
2. Salt marsh ……	5	Silt and clay ………	Various Gramineæ. Statice Armeria. In the ditches — Scirpus maritimus and Ruppia maritima.
3. Heath and commons, dry.	6	Sand…………………	Calluna vulgaris, Erica cinerea, Ulex europæus, Agrostis vulgaris, Galium verum, G. saxatile, Senecio Jacobæa, Teucrium Scorodonia, Pteris Aquilina.
Ditto, marshy….	5	Peat, sand, clay ……	Erica Tetralix, Junci, Ranunculi, Myrica Gale, Aira cæsp., Carices.
Ditto, bog & fen	1	Sandy peat, with much Sphagnum.	Various Carices, Eriophorum angustifolium, Droseræ, Melica cærulea, Hypericum elodes, Anagallis tenella, Vaccinium Oxyco.
4. Woods, parks &c.	1½	Sand and clay………	Festucæ, Phalaris, Agrostis vulgaris, Aira cæspitosa, Myrrhis temulenta, Heracleum, Scilla nut.
5. Meadows & pastures.	7¼	Sandy loams & marls on chalk: clays	Gramineæ (Bromus, Lolium, Poa, Phleum, Cynosurus &c.), Trifolia &c.
6. Cultivated lands, cornfields &c.	14½	Ditto ………………	Chenopodium album, Stellaria media, Rumices, Polygona, Senecio vulgaris, Poa annua, &c.
	41½		

The general accordance of these divisions with the position of the geological strata is also worthy of remark; the cultivated lands and pastures lying chiefly upon the chalk formation, the heaths and commons upon the greensand, and the marshes upon the silt.

In conclusion, the following tables will serve to illustrate the *botanical* character of the Flora and the general distribution of the species.

I.—*Number of Species.*

Exogens	64	Natural Orders, containing	384 species.
Gymnosperms...	1	....	1
Endogens	15	....	102
Acrogens (ferns and allies only)—	4	....	19
	84		506

II.—*Distribution of Species.*

	Exog.	Gymn.	Endo.	Acro.	Totals.
1. Trees and shrubs peculiar to dry ground	32	1	1	0	34
... ... moist & watery places	21	0	0	0	21
					55
2. Plants peculiar to woods, hedges, bushy and shady places in general. Dry ground..................	42	0	6	5	53
Moist and watery places.	10	0	9	9	28
					81
3. Plants peculiar to marine localities.					
Dry or sandy shore	4	0	3	0	7
Muddy shore, salt marshes & salt-water ditches	16	0	5	0	21
Salt water (submersed or floating plants)	0	0	2	0	2
Generally distributed	1	0	0	0	1
					31
4. Plants peculiar to other dry places	135	0	15	1	151
5. Plants peculiar to other moist pl. marshes, fens, &c.	63	0	44	4	111
6. Plants peculiar to water (submersed or floating plants. *True aquatics*).	6	0	2	0	8
					270
7. Plants more or less generally distributed	54	0	15	0	69
					69
	384	1	102	19	506
Total of species....1. Dry ground...........	213	1	25	6	245
2. Moist ground &c. ...	110	0	58	13	181
3. True water plants...	6	0	4	0	10
4. Generally distributed	55	0	15	0	70
					506

III.—*Predominance of Natural Orders.*

	Species.
Compositæ	51
Graminaceæ	43
Leguminosæ	24
Rosaceæ, 18. Pomeæ, 2. Amygdaleæ, 2. Sanguisorbeæ, 1.........	23
Scrophulariaceæ.........	23
Labiatæ	22
Umbelliferæ	21
	207

	Species.
	207
Amentaceæ: Salicaceæ 13, Corylaceæ 3, Betulaceæ 2, Myricaceæ 1..................	19
Cyperaceæ	18
Ranunculaceæ	14
Cruciferæ	14
	272

	Species.
	272
Filices: Polypodiaceæ 13, Osmundaceæ 1	14
Alsinaceæ	13
Polygonaceæ	12
Juncaceæ	12
Chenopodiaceæ	10
Primulaceæ	10
Stellatæ	8
Boraginaceæ	8
	359

	Species.
	359
Papaveraceæ 5, Fumariaceæ 2	7
Orchidaceæ	7
Violaceæ	6
Onagraceæ 4 Circæeæ 1	5
Hypericaceæ	5
Silenaceæ	5
Plantaginaceæ	5
Liliaceæ	5
Euphorbiaceæ	4
Geraniaceæ	4
Saxifragaceæ	4
Urticaceæ	4
Dipsaceæ	4
Equisetaceæ	4
Droseraceæ	3
Ericaceæ	3
Caprifoliaceæ	3
	437
Valerianaceæ	3
Solanaceæ	3
Alismaceæ	3
Typhaceæ	3
Fluviales	3
Araliaceæ 2, Resedaceæ 2, Aceraceæ 2, Linaceæ 2, Malvaceæ 2, Illecebraceæ 2, Scleranthaceæ 2, Convolvulaceæ 2, Campanulaceæ 2, Plumbaginaceæ 2, Lentibulaceæ 2, Gentianaceæ 2, Oleaceæ 2, Juncaginaceæ 2,	28
Berberaceæ 1, Cornaceæ 1, Cucurbitaceæ 1,	
	480
Polygalaceæ 1, Tiliaceæ 1, Lythraceæ 1, Celastraceæ 1, Portulaceæ 1, Oxalidaceæ 1, Crassulaceæ 1, Ulmaceæ 1, Callitrichaceæ 1, Vaccinaceæ 1, Cuscutaceæ 1, Aquifoliaceæ 1, Lobeliaceæ 1, Verbenaceæ 1, Orobanchaceæ 1, Coniferæ 1, Amaryllidaceæ 1, Iridaceæ 1, Butomaceæ 1, Dioscoreaceæ 1, Araceæ 1, Pistiaceæ 1, Lycopodiaceæ 1 ...	26
Total...	506

A Catalogue of the Flowering Plants growing in the neighbourhood of Sandringham.

Thalictrum majus. Dersingham heath, lo.

Anemone nemorosa. Woods and groves

Ranunculus Flammula. Moist gr. frequt.

——— *Lingua*. Moist places, rare

——— *Ficaria*. Common.

——— *sceleratus*. Wolferton, ra. r.

——— *bulbosus*, *repens* and *acris*. Pastures, common.

——— *arvensis*. Cornfields, ra. rare.

——— *hederaceus*. Ditches &c. rare.

——— *aquatilis*. Ditto, common.

Caltha palustris. Plentiful.

—— *radicans*. Ingoldsthorpe common, 1842; a single plant.

Papaver Rhœas. Roadsides, flds. &c. abt.

—— *dubium*. Redbrink, Dersingham, 1840, rather sparingly.

—— *somniferum*. Roadside at Rising wood, abundant.

Glaucium luteum. Snettisham beach, pl.

Chelidonium majus. Occasionally.

Fumaria claviculata. Wolferton wood, lo.

—— *officinalis*. Not uncommon.

Hydrocotyle vulgaris. Moist or watery places on heaths &c. abundant.

Apium graveolens. Ditches in Wolferton salt marsh.

Sium angustifolium. Wade moor, Roydon fen.

—— *nodiflorum*. Roydon fen.

—— *repens*. Watery places, very freqnt.

Ægopodium Podagraria. Not uncommon.

Bunium flexuosum. Frequent.

Pimpinella Saxifraga. Roadsides &c. fr.

Œnanthe fistulosa. Watery places, freqt.

——— *pimpinelloides*. Snettisham; Ingoldsthorpe and Rising commons; frequent.

Æthusa Cynapium. Waste ground, not uncommon.

Angelica sylvestris. Woods and marshy places, common.

Pastinaca sativa. Frequent.

Heracleum Sphondylium. Common; abundant in woods.

Daucus Carota. Frequent.

Torilis Anthriscus. Common.
—— *nodosa.* Dersingham, not common.
Scandix Pecten-Veneris. Sandringham, fr.
Chærophyllum sylvestre. Frequent.
Myrrhis temulenta. Common; abundant in woods.
Conium maculatum. Sparingly.
Adoxa Moschatellina. Sandringham firwoods, common.
Hedera Helix. Common.
Berberis vulgaris. Hedges &c. rare.
Epilobium hirsutum, parviflorum, montanum and *palustre.* Common.
Circæa Lutetiana. Wolferton wood, com.
Cornus sanguinea. Hedges, frequent.
Bryonia dioica. Hedges &c. common.
Nasturtium officinale. Watery places, co.
Barbarea vulgaris. Common.
Arabis Thaliana. Ditto.
—— *hirsuta.* Walls of Sandringham church-yard, roadsides &c. common.
Cardamine pratensis. Marshy meadows, very common.
Draba verna. Old walls, sandy ground, &c. very common.
Cochlearia officinalis. Wolferton & Snettisham, common.
Thlaspi Bursa-pastoris. Common.
Sisymbrium officinale. Common.
—— *Sophia.* Babingley, Castle Rising &c., frequent.
Erysimum Alliaria. Frequent.
Senebiera Coronopus. Occasionally.
Brassica campestris. Frequent.
Sinapis arvensis. Common.
Reseda Luteola. Frequent.
—— *lutea.* Chalky fields and banks, common.
Viola odorata. Common.
—— *palustris.* Dersingham fen, frequent.
—— *canina.* Abundant.
—— *flavicornis.* Sandringham heath.
—— *tricolor* and *arvensis.* Frequent.
Drosera rotundifolia. Spongy bogs, abdt.
—— *longifolia.* Ditto, common.
—— *anglica.* Dersingham fen with both the preceding; Ingoldsthorpe common; Roydon fen: not uncommon.
Hypericum quadrangulum. Marshy places, common.
—— *perforatum* and *humifusum.* Common.
—— *pulchrum.* Frequent.
—— *elodes.* Dersingham and Babingley fens &c. abundant.
Acer Pseudo-platanus. Hedges, rare.
—— *campestre.* Frequent.
Polygala vulgaris. Common.
Linum catharticum. Cornfields near Sandringham chalk-pit, not uncommon
Radiola Millegrana. Rising common, lo.
Malva sylvestris. Common.
—— *rotundifolia.* Frequent.
Tilia europæa. Hedges, occasionally.
Lythrum Salicaria. Watery places, freq.
Euphorbia Peplus. Common.
—— *Lathyris.* Waste ground at Sandringham, occasionally.
—— *helioscopia.* Fields and waste ground, frequent.
Mercurialis perennis. Wolferton wd. abt.
Euonymus europæus. Wolferton wood.
Montia fontana. Watery places, frequent.
Silene inflata. Frequent.
—— *maritima.* Snettisham beach, ple.
Lychnis Flos-cuculi. Watery places, com.
—— *dioica.* Hedges &c. frequent.
Agrostemma Githago. Cornfields, occas.
Sagina procumbens. Common.
—— *apetala.* With the preceding, oc.
Arenaria trinervis. Sparingly.
—— *serpyllifolia.* Frequent.
—— *rubra.* Sandy soil &c. abundt.
—— *marina.* Wolferton marsh, abt.
Cerastium vulgatum and *viscosum.* Comn.
—— *aquaticum.* Frequent.
Stellaria media. Very abundant.
—— *holostea.* Frequent.
—— *graminea.* Very common.
—— *uliginosa.* Dersingham heath.
Spergula arvensis. Wolferton, plentiful.
—— *nodosa.* Near Sandringham chalk-pit, common.
Geranium Robertianum and *molle.* Com.
—— *pusillum.* Frequent.
Erodium cicutarium. Sandy places, abt.

Oxalis Acetosella. Sandringham fir-wood, abundant.
Rosa rubiginosa. Borders of fields and woods, common. Wild?
— *canina.* Roydon fen, not plentiful.
Rubus fruticosus. Common.
— *leucostachys.* Rare.
— *Idæus.* Wade-moor wood, plentif.
— *corylifolius.* Hedges, not uncom.
— *cæsius.* Ditch-banks and moist places, not uncommon.
Fragaria vesca. Frequent.
Comarum palustre. Dersingham heath; Roydon fen: not uncommon.
Potentilla anserina. Frequent.
——— *reptans* & *Fragariastrum.* Com.
Tormentilla officinalis. Moist heaths &c. abundant.
Geum urbanum. Common.
— *rivale.* Wolferton wood, abundant.
Agrimonia Eupatoria. Common.
Spiræa Filipendula. Anmer road.
——— *Ulmaria.* Moist places, common.
Mespilus Oxyacantha. Hedges, almost everywhere.
Pyrus Malus. Hedges near Snettisham.
Prunus Padus. Wolferton wood.
——— *spinosa.* Common.
Poterium Sanguisorba. Not uncommon.
Ulex europæus. Common.
Genista anglica. Heaths, occasionally.
Spartium scoparium. Ditto, common.
Ononis arvensis. Frequent.
Anthyllis Vulneraria. Anmer fields, not uncommon.
Medicago lupulina. Very common.
Trifolium repens. Extremely common.
——— *scabrum.* Snettisham beach, abundant.
——— *subterraneum.* Ditto, rare.
——— *pratense.* Very common.
——— *arvense.* Very frequent.
——— *procumbens* and *minus.* Comn.
——— *filiforme.* Near Sandringham chalk-pit, frequent.
Lotus corniculatus. Abundant.
— *major.* Dersingham heath, among bushes, common.
Ornithopus perpusillus. Sandringham broom-cover, common.
Vicia Cracca. Hedges, frequent.
— *sativa.* Frequent.
— *angustifolia.* Cornfields occasionally
— *sepium.* Hedges and woods, comn.
Ervum tetraspermum. Not uncommon.
Lathyrus pratensis. Common.
Orobus tuberosus. Dersingham heath, co.
Saxifraga granulata. Dersingham common and heath, abundant.
——— *tridactylites.* Walls, abundant
Chrysosplenium oppositifolium. Wolferton wood.
Parnassia palustris. Field at the back of Wade moor wood; Rising comn.; fr.
Sedum acre. Sandy ground, walls, &c. abundant.

(To be continued).

ART. CXLVI. — *Journal of a short run into Badenoch, Strathspey, &c., from the* 15*th to the* 21*st of April,* 1843. By Mr. J. B. BRICHAN.

Grantown, April 17, 1843.

DEAR SIR,

I am at present on my return from a very short sojourn in Badenoch; and certainly the season of the year, and the weather when I left home, afford little or no foundation on which to construct any sort of article whatever for a botanical journal. It is quite possible, however, that the very *negation* of Botany may be made somewhat interesting to the lovers of Flora, especially if it be merely a temporary negation, the effect of climate and season on the vegetable productions of a district in which, as the season advances, the hills and vales are thickly clad with

> "Bells and flow'rets of a thousand hues."

And such is the romantic Highland district in which I have just been. The day before I entered it was bleak and wintry, and I was glad to get myself housed for the night at Carr Bridge. Next day was fresh and mild, and the snow, which but the day before gave to everything the appearance of winter, now only chequered mountain and plain, and was fast yielding to the genial breath of what was really spring weather. Still, however, except where a small spot appeared in the shape of a garden, no green thing but "the evergreen pine" cheered the sight that was longing for the sweet gems of spring. And perhaps a more dismal spectacle could scarcely meet a botanist's eye, than the one I witnessed between Carr Bridge and Aviemore. The southern slope of a tolerably high and rocky hill, was thinly sprinkled with blasted firs, the remains of a forest consumed by fire, or dead from the sterility of the soil. It was some alleviation of the dreariness of such a sight, that on each side of the road the native birch, yet scarcely throwing out a catkin, scented the air with its peculiar odour. As I went on, with the magnificent group of the Cairngorms, partly clad in snow, on the one hand, and bleak rocky hills on the other, the wide wooded valley of Rothiemurchus spread before me, and waiting, as it were, "in the hope of summer eves,"—I could not help thinking, and being delighted with the thought, how many a beautiful flower the summer's heat would call forth from the mountain cleft, and the sloping woodland, and the rich alluvial plain; and with what ecstacy I—for I *might* be there — would cull the precious gems, and breast the mountain side in search of health, and beauty, and that peculiar pleasure which only botanists know.

As I entered Badenoch, the air was balmy as summer. The heather—I prefer the word to the English *heath*—"exhaled its perfume," although far from its season of purple bells; and the birch, the prevailing natural wood of the district, grew more thickly on every side of me. Here and there, a few alders and hazels were hanging out their tassels, and a willow occasionally exhibited its golden flowers. The beautiful and romantic Loch Alvie was slightly curled by the breeze, but its vegetation as yet exhibited no signs of life. A few withered reeds were all that remained to show that a single green thing had ever reared its head above its waters. As I drove along the foot of a wooded slope opposite Loch Insh, a solitary primrose cheered my sight. It was the only wild thing in the shape of a flower that I had seen since I left Morayshire. Between Loch Insh and Kingussie there stretches a vast alluvial plain, in which are dug up the roots and trunks of fir trees, known in Scotland by the name of "moss fir." It is well known that the whole district was once covered with pine. Kingussie signifies "the head of the fir-wood," and Badenoch, "a clump or patch of trees." The plain must have formed, at one time, the bottom of a lake, of which Loch Insh is all that remains.

The weather, as I returned to-day, was equally delightful as before, and wood, and moor, and mountain, seemed "to listen for the rustle of their leaves." Vanessa Urticæ, our earliest butterfly, fluttered around me in considerable numbers. The district, in point of climate, seems not far behind the "How of Moray." Another week, or fortnight at most, would bring it up to the point which the lower and more temperate district had reached when I left it.

The Cairngorm group has frequently witnessed the enthusiastic rambler after "weeds" scaling its craggy sides, gathering its treasures, and laving his burning brow or parched throat in its cool and delicious fountains. I am not aware that the district of Badenoch has often been botanically perlustrated; but I am quite sure that its richly varied scenery — the extensive plain alluded to — its inferior ranges of hills — the rocky steeps of the "wild and majestic" Craig-dhu — the sweet sequestered Loch Uvie — and the beautiful Loch Laggan, which, though not so large or so well known, may vie with Lochness — would afford to the botanist who could devote a summer month to its examination, as rich a treat and as abundant a *harvest* as any other part of "the stern Scottish Highlands."

April 18. — Dalnashauch Inn, near Bridge of Avon. I have just passed over fourteen miles of excellent road between Grantown and this uncouthly named locality; and I must *bother* you a little more with almost the same negation of Botany which at present characterizes the district above described, and my description thereof. I am near the wildly situated Bridge of Avon (pronounced *Awn*), and hear the unceasing sound of that rapid mountain torrent which issues from Loch Avon, at the foot of Scotland's highest hill — Ben-mac-dui, and of which the honest old farmer, mentioned in Sir T. Lauder's 'Morayshire Floods,' said, alluding to a piece of ground of which the Avon had just deprived him, "I took it frae the Avon, and let the Avon hae its ain again." Certainly this has very little to do with Botany, and amounts to something very like a negation of it. But that I may not be altogether barren on the subject that is dear to all *phytological* hearts, let me just say that the beautiful drive I have last accomplished exhibits, as the prevailing natural production of Strathspey, "the gay green birk," at present of course quite purple — that there is a considerable degree of wild Highland grandeur in the immense slope between Castle Grant and the Spey, which is thickly clothed with Scotland's own pine—and that all along that winding, deep and rapid river, from Grantown to Ballindalloch, "the alders dank that fringe the pool" assert their peculiar right to the river's margin, and are at this moment clad with a profusion of brown or yellow catkins. The larch, which is planted in great abundance along the hilly slopes, is now throwing out its "tassels red" and sweet virgin green leaves. Its flowers are sometimes *white—quære*, why? They are here, as in Badenoch, though I have not mentioned them in my notes on that district, a week or a fortnight behind those in Moray's balmiest spot—Forres. I think I saw, about half way between this and Grantown, one solitary flower of Anemone nemorosa.

In the church-yard of Cromdale, three miles and a half from Grantown, lie the remains of M— C—, one of the sweetest flowers ever born in the Highlands, and transplanted to the lower part of the "Province." I crave this passing tribute to the memory of one, with whose surviving amiable sisters I am proud to say I am on intimate terms. In April, 1839, I accompanied her remains from Nairn to the interesting spot where they are now mouldering in silent dust. The weather, although it was later in the month than this, was keenly frosty, and the interests of the vegetable kingdom were as far from my thoughts as its beauties were from their summer perfection. At the moment I write, nothing is wanting to complete the interest of the landscape, but the green grass, the blooming heather, and the summer foliage of the forest. My yesterday's friend, Vanessa Urticæ, still flits across my path, enjoying Nature's hour of balm; and that big, humming, or, as we call him in Scotland, *bumming*, fellow, Bombus terrestris, wings his way as briskly as if summer itself were invigorating his powers of flight. The beauties of Strathspey are great, but they are "tame and domestic" in comparison with those of Badenoch. Let botanists visit Clova, if they will—but why not run a little farther north?

Manse of Kirkmichael. — April 18, ¼ to 11, P.M. Although half asleep, I cannot resist the temptation I feel to teaze you with the very important information that I left Dalnashauch to-day about 1 o'clock, and after crossing the lower extremity of Glenlivet, proceeded up the Avon through what is called Strathdown. About six miles of my road was so narrow that two vehicles could scarcely pass each other, with a steep slope above and below, the only protection against an overthrow being the natural birch-wood which skirted the way. The alder too was there. Strathdown is a narrow, wild, romantic valley, through which runs the beautifully clear Avon, and about the middle of which, on a bank of the river, some hundred feet above its bed, is situated the manse of Kirkmichael, from which I now write. The view from this spot is delightful, comprehending the summits of Cairngorm and Benavon—the climate not inferior to that of any part of my route above described. The ceaseless *sough* of the Avon here also greets my ear, and reminds me of my late residence on the banks of the Dee, which, in the colour and clearness of its waters it strongly resembles. In the dining room immediately below me is a flower-pot containing a few plants of mignonette in full flower. The seed was sown last spring — the young plants appeared in autumn — and the sweet-scented favourite of ladies and of bees has been in flower all the winter. Good night.

April 19. — I drove to-day to Tomintoul, six miles farther up the Avon than Kirkmichael, and within about twenty miles both of Ballater and Braemar, but could see nothing to neutralize the same monotonous negation of Botany I have already experienced, except a flower or two of Tussilago Farfara, which has been in blossom for the last month. Such, however, is the mildness of the season, that I have observed since yesterday a marked difference in the buds of the trees, now fast opening into green leaves.

April 20.—I am again at Dalnashauch. In my downward progress hitherward the only additional harbinger of summer that I observed was the bog-myrtle; all other things are *in statu quo*. I am about to proceed down the Spey to Rothes, to leave for the present — perhaps for ever — the interesting scenes through which I have passed, and which, though at all times worth seeing, are at this moment but opening into that state of mingled beauty, and sweetness, and grandeur, in which the devotee of phytological science finds his most appropriate and most delightful walk.

Forres. — April 21. The drive down the Spey from Inveravon to Craigellachie is partly through a bleak moorland tract, lying at the foot of Belrinnes, and partly through one lower and more cultivated, in which lie the church, manse and village of Aberlour, and in which, near the river-side, I saw, as evidences of the warmer temperature, patches of Anemone nemorosa on one side of the road, and low green meadows on the other. The iron bridge at Craigellachie is a fine specimen of art: at its northern extremity, where the road, at right angles to the line of the bridge, and parallel to the course of the river, is cut out of the face of a solid rock, grows Galium boreale, at this season scarcely visible. At this point I re-entered my own county—Moray. Two miles farther down lies the beautifully situated village of Rothes, with its old castle, romantic *burn* and fertile fields. On the inverted root of a tree, lying above a heap of stones, I observed a single head of Lamium purpureum, one of the earliest flowering and by no means least beautiful plants in the climate of Moray.

I left Rothes to-day—the weather still very fine. As I approached Elgin, the difference in the progress of the larch towards its summer foliage, began distinctly to appear; and Ulex europæus, now nearly in full bloom, showed the superior mildness of the climate of the "How of Moray." The gardens and shrubberies were half clad in green. After resting an hour or two, I left Elgin, passed the pine-clad Knock of Alves, the well-known station of the beautiful Linnæa, and was soon once more in Forres, where a week ago everything wore the appearance of winter, but where everything now is smiling into summer sweetness, and where, both in summer and winter, there blooms many a tender "bell and flow'ret," that may well vie with England's fairest. I am, Dear Sir,

Your's faithfully,

J. B. Brichan.

To the Editor of 'The Phytologist.'

Art. CXLVII. — *Notice of 'A Visit to the Australian Colonies.* By James Backhouse.' London: Hamilton, Adams & Co. 1843.

(Continued from p. 577).

New South Wales.—The continent of New Holland, as far as visited by James Backhouse, seems less attractive to a botanist than the adjacent islands; still there is sufficient to invest it with an interest surpassing that possessed by most other countries with which we are on a similar footing of familiarity. There is nothing to compare with the gigantic forests which form so distinguishing a character of Tasmania, or with the wild luxuriance of Norfolk Island; yet the pines to which that island has given a name, may be seen, even at Sydney, towering here and there above the surrounding scenery, and proclaiming a climate different from our own; and there is a host of trees and plants altogether distinct from those of Tasmania.

On new-year's day, 1835, many beautiful native shrubs were in flower, including Lambertia formosa, Grevillea buxifolia and sericea, Epacris grandiflora, &c.: these grow in heathy soil, on the bushy ground covering the sandstone.

January 15.—"We walked to Elizabeth Bay, and met the Colonial Secretary* at his beautiful garden, which is formed on a rocky slope, on the margin of Port Jackson, of which it commands a fine view. Here are cultivated specimens of many of the interesting trees and shrubs of this colony, along with others from various parts of the world, intermixed with some growing in their native localities. Among the last, is a fine old rusty-leaved fig-tree, Ficus ferruginea, which is an evergreen, and has laurel-like leaves. A noble specimen of Acrostichum grande, a fern of very remarkable structure, from Moreton Bay, is attached to a log of wood, and secured by a chain to a limb of this fig-tree. The walks at this place are judiciously accommodated to the inequalities of the sinuous bay, and are continued round a point covered with native bush. Peaches are ripe in the open ground in abundance, and liberty to partake of them freely was kindly given by the open-hearted proprietor. Dendrobium speciosum and linguiforme, remarkable plants of the Orchis tribe, are wild here, upon the rocks; and D. tetragonum is naturalized on a branch of Avicenna tomentosa, covered with rock-oyster shells, and suspended in a tree near the shore. A fine patch of the elks-horn fern, Acrostichum alcicorne, retains its native station on a rocky point in the garden."—p. 239.

In a walk by the north shore on January 27, our traveller observed an old bushy fig-tree overhanging the water, some of its limbs almost covered with Acrostichum alcicorne and Dendrobium linguiforme; but we pass on to a description of Botany Bay, the account of which is less inviting than its far-famed name would lead us to anticipate, still not without instruction.

"Botany Bay, with its gay shrubs, might wear an imposing aspect to the first navigators of these seas, after a tedious voyage; but its shores are shallow, and not convenient for landing, and most of the land on the north side, is dreary sand and marsh, of little real value. The pieces that are worth anything, are of very limited extent, and are in few hands. One of the proprietors has established a woollen manufactory, which, from the price of labour in this country, is not likely to pay. He told us that the leaves of the wooden-pear, Xylomelum pyriforme, dye wool yellow, and that the branches of Leptospermum scoparium, answer the purposes of fustic-wood, and dye fawn-colour. A handsome species of grass-tree, Xanthorrhœa arborea, was in flower, in some of the sandy grounds; its root-stocks were surmounted by an elegant crest of rush-like leaves; from the centre of which the flower-stem arose to ten feet in height; somewhat less than the upper half of this, was densely covered with brown scales, giving it an appearance something like a bull-rush. From amongst these scales the small, white, star-like flowers emerged, as in the other species of this genus. The plants with large root-stocks had been destroyed, for fuel, for which purpose they are much valued. In this neighbourhood, as well as at Port Jackson, the sweet tea, Smilax glyciphylla, abounds. It is a low, climbing plant, with narrow, heart-shaped leaves, having a taste something like Spanish liquorice. It was used instead of tea, by the early settlers, and formed the chief ingredient in their drink, on occasions of rejoicing."—p. 291.

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* Alexander MacLeay, Esq.

The following notices of Zamia spiralis and three species of Loranthus are interesting.

July 18.—"In a bushy hollow we met with Zamia spiralis, a singular, palm-like plant, in fruit. The whole fruit has some resemblance to a pine-apple; but large nuts, in red coats, are fixed under the scales forming the outside. The Blacks place these nuts under stones, at the bottom of water, in order to extract some noxious principle from them; they are afterwards converted into food. In wet weather, an insipid, jelly-like gum, which is wholesome, and not unpalateable, exudes from the plant.

"20th. Three species of the genus Loranthus, which consists of plants allied to mistletoe, grow parasitically on trees in this neighbourhood. They have handsome blossoms, a little like honey-suckle, but with more green, than yellow or red in them. Two of them have external roots, adhering to the bark of the trees that support them, and incorporating themselves with it; but occasionally, one of these species happens to grow upon the other, and then it emits no external root! This is a striking instance of that power, sometimes exhibited by a plant, to adapt itself to circumstances, and which is called vegetable instinct."—p. 294.

The question of specific identity between the productions of countries so widely separated as Britain and her Australian possessions, is one of great and increasing interest. And when we find the plants and insects of a far distant land named unhesitatingly as identical with our own, we are apt to feel a desire for a more detailed explanation. We learn from the 'Narrative' before us, that "on the margins of the pools of the Bell River, there are reeds,—Arundo Phragmites, bull-rushes,—Typha latifolia, and some other aquatic plants, similar to those of England." Are we to infer that these are the aboriginal denizens of the spot, or have their seeds been accidentally introduced from the mother country? They occur in the valley of Wellington, formerly a penal settlement for educated prisoners, and still the residence of European missionaries.

On the afternoon of the 25th of September our traveller, still in Wellington Valley, ascended a hill about 500 feet high; from the summit is an extensive view over the adjoining country, which seems to be a continuation of open forest hills, many of them black and bare from fire.

"On the upper portion, there were she-oak, Casuarina quadrivalvis, and Grammitis rutæfolius, a small fern, both of which are common in V. D. Land, also a Cycas? a remarkable Eucalyptus, and Sterculia diversifolia. Upon the last, there was a remarkable Viscum, or mistletoe. Lower down the hill, the beautiful Acacia venusta formed a bush about six feet high; it bears heads of small, globular, golden blossoms."—p. 322.

(To be continued).

ART. CXLVIII. — *Varieties.*

298. *List of Jungermanniæ &c. found near Penzance.* I send for insertion in 'The Phytologist,' a list of Hepaticæ found in the neighbourhood of Penzance. Some of the Jungermanniæ may be considered amongst the scarcest and most interesting of our British species, and I believe we need not fear comparison with any district of the same extent in the kingdom. With about four exceptions, all the plants enumerated in the following list may be gathered within three miles of Penzance, and but one species is entirely barren.

Riccia glauca. Wheat-stubbles, Bologas &c., in fruit.

Anthoceros punctatus, α. and β. Trembath mills, plentifully in fruit.

Marchantia polymorpha. A single fertile plant.

Fegatella conica. Common, with male receptacles only.

Lunularia vulgaris. Very plentiful; with male receptacles at Trembath mills.

Jungermannia calycina, Taylor. Newlyn cliff, beautifully in fruit.

—— *epiphylla.* Common.

—— *Blasia.* Chyanháll moor, where it fruits plentifully every season.

—— *furcata.* Common in fruit.

—— *pinguis.* Chyanháll moor, in fruit.

—— —— β. Hayle sands, in fruit.

—— *multifida.* Common in fruit. I once gathered it with gemmæ of a yellowish green colour at the extremity of the fronds.

—— *Hibernica*, Hook. Hayle sands, in tolerable abundance, where it fruits very beautifully, with both male and female receptacles; the fruit-stalks generally attaining the height of two inches.

—— *Ralfsii*, Wilson, MS. Hayle sands, with anthers in the autumn and capsules in April. This is a beautiful and highly curious species.

—— *pusilla.* Chyanháll moor; in male and female fruit.

—— *Hookeri.* Chyanháll moor, very sparingly, but the specimens have generally male and female fruit.

Jungermannia asplenioides. Chyune, with anthers.

—— *punctata.* Gulval, with calyces; J. Ralfs, Esq.

—— *pumila.* Truro river, on shelving stones, in fruit, very scarce. I have also received it from the Rev. C. A. Johns, from near Helston.

—— *crenulata.* Chyanháll moor, common in fruit.

—— *emarginata.* Newlyn cliffs; upon moist rocks, in fruit.

—— *turbinata.* Near Hayle causeway, in fruit.

—— *excisa.* Dry hedges near Chyanháll moor, in fruit.

—— *ventricosa.* Newlyn cliffs, abundant in gemmæ; and at Carn Brea with calyces.

—— *bicuspidata.* Common in fruit.

—— *byssacea.* Chyanháll moor; in fruit August and September.

—— *capitata ?* Chyanháll moor, near the water's edge. I am not certain if this is not what I take for J. excisa, on dry hedges, somewhat altered by local circumstances.

—— *nemorosa.* Gulval, with fruit and gemmæ, J. Ralfs, Esq.

—— *undulata.* Bologas, on stones in rivers, moist rocks &c., and on the ground in Chyanháll moor, in fruit.

—— *resupinata.* Bologas, on hedges, abundant in fruit: a large state on a moist rock, Newlyn cliffs.

—— *albicans*, *complanata* and *scalaris.* Common, in fruit.

Jungermannia polyanthos. Trembath mills, in fruit.

—— *viticulosa.* Newlyn cliffs, barren.

—— *Trichomanis.* Newlyn cliffs, in fruit. There is also a plant very nearly allied to this species, which is frequently found on roofs of caves and other shady places, generally very abundant in gemmæ, which I discovered with capsules last spring, in a rather exposed situation near Newlyn cliffs.

—— *bidentata.* Common in fruit.

—— *heterophylla.* Newlyn cliffs, in fr.

—— *barbata.* Gulval; discovered by Mr. Ralfs since this list was written.

—— *Francisci.* Near Haye, with capsules and gemmæ; near Redruth, with capsules, anthers and gemmæ, and in summer an elongated state, with black balls.

Jungermannia reptans. Gulval, in fruit, J. Ralfs, Esq.

—— *Mackaii.* Gulval carne, with calyces, J. Ralfs, Esq.

—— *serpyllifolia.* Bologas &c. in fruit.

—— *minutissima.* Bologas, in fruit.

—— *calyptrifolia.* Gulval, in fruit, J. Ralfs, Esq.

—— *dilatata.* Bologas, both male and female states.

—— *Tamarisci.* Carn Brea, in fruit.

—— ——— *β. apiculata.* Bologas, plentiful in one spot.

— *William Curnow ; Pembroke Cottage, Newlyn Cliffs, Penzance, March* 11, 1843.

299. *Note on the absence of Jasione montana and Verbena officinalis from the vicinity of Edinburgh.* I was much surprised to see from the 2nd edition of the Edinburgh 'Catalogue of British Plants,' that neither Jasione montana nor Verbena officinalis have been found within thirty miles of that city. Not having been in Scotland, I cannot say whether this is correct, but to us Southrons it seems odd. The *absence* of plants, usually common, though not so striking to the eye, is, or ought to be, nearly as interesting as the *presence* of others usually rare.—*Geo. Sparkes ; Bromley, Kent, April* 18, 1843.

300. *Note on British Plants occurring in foreign countries.* It would be extremely interesting if some botanist would publish a list of English plants, with the foreign countries in which they are found. The information might be taken from Don's book, as far as that book extends. Myrrhis odorata grows in *Spain*, although I have not met with it in England south of Derbyshire, nor do I find it in any of your southern local lists.—*Id.*

[The above note by Mr. Sparkes affords us an opportunity of mentioning Mr. Watson's admirable work on 'The Geographical Distribution of British Plants,' the first part of which, containing the Ranunculaceæ, appeared in the early part of the present year. Being printed for private distribution *only*, we have hitherto hesitated to give a detailed notice of this book; but our scruples having been removed by the perusal of a notice of a previous work on the same subject by Mr. Watson, in Loudon's 'Magazine of Natural History,' we hope, in an early number, to endeavour to do justice to its merits. About a dozen years ago, we received specimens of Myrrhis odorata, collected in a pasture field near Chipstead, Surrey, by a young lady, who stated that it was plentiful in the locality, although not cultivated in that neighbourhood.—*Ed.*]

301. *Note on Statice rariflora.* Mr. Notcutt's Statice (Phytol. 429 and 492) is, I perceive, regarded as a distinct species by some of the continental botanists. Specimens have recently been published in Reichenbach's 'Flora Germ. Exsic.' No. 2200, as "Statice rariflora, *Drejer*! Fl. Hafn. Excurs. p. 121." I have not seen Drejer's work. —*William Borrer; Henfield, April* 23, 1843.

[See also Mr. Henfrey's paper, Phytol. 561; and Mr. Babington's remarks in our present No. p. 594.—*Ed.*]

302. *Note on Smilacina bifolia.* I think it has not been noticed in 'The Phytologist,' that Smilacina bifolia was long ago reckoned a British plant, although the fact has been brought forward by Mr. E. Forbes, in Taylor's 'Annals' for February. Parkinson says, "It groweth in moist shedowie and grassie places of woods, in many places of the Realm," (Theatr. 505); and in Ger. Em. 409, it is stated to grow "In Lancashire, in Dingley wood six miles from Preston in Aundernesse; and in Harwood neere to Blackeburne likewise."—*Id.*

[The following is the Note referred to by Mr. Borrer.—"*Maianthemum bifolium.* This very pretty plant, recorded as British in the 'Annals' for January, is a rediscovery, and not altogether new to the British Flora. It has been already figured and recorded as English, but a long while ago. In Gerarde's 'Herbal,' 2nd book, 90th chap. p. 409, will be found a very characteristic portrait of it under the name of *Monophyllum* or *One blade.* He classes it with his *Wintergreenes* (Pyrolæ), and says "it groweth in Lancashire in Dingley Wood, six miles from Preston in Auldirnesse, and in Harwood near Blackburne likewise." "It floureth in May, and the fruit is ripe in September." Let the Lancashire botanists look out for it next spring. It is strange that Gerarde's notice of it should have escaped our older botanists; and stranger still, that in the Linnean Society's copy it is marked "*Convallaria bifolia*" in Sir James E. Smith's own handwriting, apparently without his having noticed the localities given for it below. In the south of Norway it is very abundant in pine-woods on a gneiss soil, and should be looked for in similar situations in the north of Britain.—EDWARD FORBES." —'Annals and Magazine of Natural History,' February, 1843, p. 158.—*Ed.*]

303. *Dicranum taxifolium and adiantoides.* Besides the characters given in 'Muscologia Britannica,' these two species are distinguished by the following peculiarities. D. taxifolium has the stem constantly unbranched, except perhaps at the very base; leaves linear-lanceolate, the upper margin presenting a regular unbroken curve line; peristome inserted considerably below the mouth of the capsule; calyptra with an inflexed margin at the base. In all these particulars D. adiantoides exhibits a perfect contrast, when not in a dwarf state: sometimes indeed the latter has simple stems, but the outline of the leaves would always be sufficient, of itself, to indicate the species. Moreover, the teeth of the peristome, in D. taxifolium, are more suddenly contracted above into long slender points, and they are beset

externally with prominent transverse bars. The texture of the leaves and of the capsule is more dense and opaque, and the perichætial leaves and vaginula are considerably longer than in D. adiantoides. In a dried state also the two mosses have a different aspect, the foliage of D. taxifolium being less disposed to curl. I have never observed any such ambiguities as those which are pointed out by Mr. Sidebotham, (Phytol. 581).—*W. Wilson; Orford Mount, Warrington, May* 5, 1843.

304. *Dicranum osmundioides and bryoides.* The difference existing between these two species was long ago indicated by Meyrin, but his observations have been overlooked. The former of these two mosses has the calyptra mitriform, with the margin at the base inflexed. In D. bryoides the calyptra is constantly dimidiate, and the leaf has a colourless cartilaginous border; characters which would be amply sufficient to distinguish the two species, even if their mutual resemblance were greater than it is. They differ also in the form of the capsule, and in the shape of the leaves. I may here remark that the blending of these two species, in 'Muscologia Britannica,' is solely attributable to their not having been compared together with due deliberation. Some species, in order to be properly understood, must be patiently studied in a living state, and at various stages of growth. If such a method be observed, the student will have no difficulty in persuading himself of the validity of those distinctions by which Polytrichum commune is separated from P. gracile, P. aloides from P. nanum, and Orthotrichum Rogeri from O. affine.—*Id.*

305. *Calla æthiopica*, L. One evening in April my attention was forcibly drawn to this plant (then in the parlour, not covered by glass), as it was copiously distilling water from the tips of its leaves. The evening gave no signs of an atmosphere overcharged with moisture, and at night the stars shone with brilliance. The roots of the plant had been well supplied with water in the forenoon. Mr. Quekett's admirable paper (Phytol. 218) recurred to mind, and I was induced to examine closely a phenomenon which presented itself to my notice for the first time, and in circumstances where I could not expect to see it. The exudation was observed on such leaves only as had the upper portion of the cylindrical points *faded* and *discoloured*, the line of demarcation between the faded and the living part indicating the spot where the fluid escaped; in every other respect the position of the outlet was altogether indeterminate, some leaves discharging their fluid at the base of the cylindrical point, others at a spot still lower down, and one at a considerable distance from the top, but close to the margin of the leaf, at a part which had become

discoloured. This led me to examine carefully the so-termed "marginal vein," which proved to be an *open continuous channel* of peculiar structure, extending from the base to the top of the leaf, altogether different from the vascular tissue constituting the proper veins, but no doubt in communication with them, and serving as the recipient and conductor of the fluid conveyed by them from the root. It is sufficiently wide to admit a bristle, which may be passed up it without the aid of a lens. On cutting a leaf across with scissors, the fluid escaped from the midrib and veins, but less plentifully than from the marginal channels. One leaf, which had recently expanded, and had its cylindrical point unfaded at the extremity, did not give out any fluid, nor was there any escape from the flower: with a microscope I could not detect any pore or valve, such as is stated to exist in Limnocharis Plumieri; hence I am inclined to infer that the exudation does not take place, even in a close humid atmosphere, until some previous natural decay of the cylindrical point of the leaf. Those who have the means of proving the contrary are requested to pursue the enquiry. It may be proper to add that an escape of fluid was observed at the back of two of the leaves, whose extremities were so curled as to admit of a lodgment of the water in that position, and that a quantity of the fluid, collected on glass and suffered to evaporate, left behind it only faint traces of mucilaginous matter. The opinion entertained by some, that spiral vessels convey air and not fluid, will derive little support from an examination of this plant.—*Id.*

306. *On the buds of Robinia Pseudacacia.* One fine evening last summer, during one of those welcome intervals of relaxation which are afforded by the visits of an esteemed friend, we happened to stroll under the shade of this tree, when a happy collision of ideas directed our joint attention to its well-known property of suddenly putting forth its foliage, late in the spring, without any previous warning. On cutting across one of the petioles, near its base, with a sharp penknife, I was struck with the appearance of an open cavity lined with stiff white pubescence; and as there was no trace of an external axillary bud, it instantly occurred to us that this tree resembled Platanus in its mode of vegetation. Longitudinal sections of this part were forthwith submitted to the microscope, when lo! instead of a solitary bud, no less than three were contained in the hollow base of each petiole, one placed immediately below the other, the lowest in a state of less perfect formation. It remained to enquire, at the proper season, whether or not two of the three buds were abortive, and I have recently directed my attention to this matter. The uppermost bud,

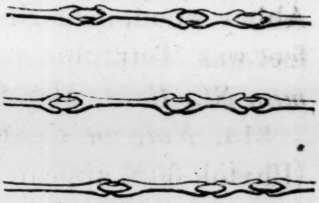
being the largest and most vigorous, is that which, in ordinary circumstances, develops itself into a branch; but the one below it does certainly vegetate, and is visibly protruded from the cavity, so as to indicate a capability of immediately replacing the upper one, if that should be destroyed by frost or other accident. I wish some of your correspondents would examine other species, and also the Platanus. Professor Nuttall informs me that this mode of producing buds occurs in Psidium. May it not be a general property of tropical trees which do not form visible external winter-buds?—*Id.*

307. *On the buds of Coniferæ.* Unlike dicotyledonous trees, which invariably produce a bud at the base of every leaf, either axillary or intra-petiolar, the Coniferæ have the greater part of their leaves destitute of buds, which are comparatively few, and scattered at distant intervals along the branches. On the axis of trees of this order, the branches exhibit a tendency to develope themselves in a peculiar manner, so that the tribe is characterised by the pyramidal or conical shape of the individuals belonging to it. No dicotyledonous tree, that I know of, produces its branches in whorls, such as we see in Pinus and Abies. Can any of your readers inform me of an exception to the rule in these genera; and whether any other genus is conformable to it? In Larix this tendency does not appear to exist; it is not very obvious in Taxus; and even in full-grown trees of Pinus sylvestris it seems to be absent.—*Id.*

308. *Vinca major.* This appears to be one of the connecting links between the Apocynaceæ and the Asclepiadaceæ. No British author seems to have accurately described the pistillum, which has a very curious structure. The so-called stigma, described in Smith's 'English Flora,' although it bears considerable resemblance to a genuine stigma, cannot be considered to be such in reality, destitute as it is of stigmatic fluid, and moreover surrounded and fenced by a copious fringe of rough hairs forbidding the access of pollen. The style, with its appendages, is spindle-shaped, much and suddenly dilated in the thickened part, where there is a flattened edge nearly covered with a dense pubescence, under which is an orange-coloured reflexed membranous zone, covered with viscous fluid, and constituting, wholly or in part, the true stigma. The remainder of the style above the thickened part appears principally to serve the office of a pillar, to support a canopy formed of the crested extremities of the anthers, whose cells are lower in position than the stigma of Smith, but higher than the true stigma, the extent of which is somewhat doubtful. It may either comprehend the whole edge of the thickened part, which

has the pubescent zone imbued with the viscous fluid, abounding with active molecules, and easily diffusible in water; or it may consist only of the reflexed orange border underneath. The latter is rendered highly probable by the fact that pollen grains are constantly found attached to this part with their tubes fully developed, and some of them in positions scarcely accessible were it not for the curved form of the filaments, which give a favourable direction to the pollen as it falls from the anther. The central tissue, from this part to the base of the style, is composed of very slightly cohering oblong cells, of the same orange colour; and the whole may be compared to a funnel with a long narrow stalk, lying between two bundles of vascular tissue, which perforate the expanded part of the funnel on two opposite sides, and then pass up into the region above the true stigma, where they become greatly expanded and multiplied, so as to form a cylindrical congeries of spiral vessels, whose dark colour might lead to the supposition that they contained air, if it were not that there is no appearance of extricated bubbles on pressing portions of them when immersed in water. A portion of the placenta has the same orange tint, and is probably a continuation of the stigmatic tissue; but I sought in vain for pollen tubes in this region, and indeed they were not visible in the style, where they would have been so conspicuous had they been present. It may be that fecundation in this plant is of rare occurrence.—*Id.*

309. *On the glandular woody tissue of Coniferæ.* The structure of the circular glands being still a subject of debate among physiologists, permit me to send you a drawing of a longitudinal section of pine wood, perpendicular to the medullary rays, exhibiting sections of the glands. By way of explanation, let the contiguous walls of two cells, otherwise in perfect contact, be supposed to be separated here and there by small lens-shaped blisters, which are perforated in the middle, and the cavity filled up with a yellowish nucleus, having a slight depression in the centre of each convex face, immediately below the aperture of the membrane. The drawing represents the object magnified 300 diameters.—*Id.*



Section of Fir wood (Deal), Longitudinal and perpendicular to the medullary rays; 300 linear.

310. *On the spiral porous cells in the wood of the Yew tree.* The representation of these, after Kieser, in Lindley's Introduction, ed. 2, does not agree with my own observations. The spirally lined woody cells I believe to be perfectly distinct from the small oblique glands which are supposed to be situated between the spires, and I consider

that the glands belong entirely to the medullary rays, on which they are placed obliquely, and somewhat prominent beyond the membrane composing the ray. They are much smaller than the glands of the woody tissue, and of different shape.—*Id.*

311. *Note on the Locality of Pæonia Corallina.* I observed this plant growing in the rocky clefts of the Steep Holmes, in the Severn, in the summer of 1836, but it was then nearly destroyed by destructive visitors. When first added to the English Flora by the late Sir Francis B. Wright, in 1803, he observed it growing in great plenty on the island. A solitary plant was some time since observed growing in the centre of a large wood near Bath, Somerset, by Miss Lonsdale; but I am informed it has recently been dug up. — *T. B. Flower;* 8, *Surrey St., Strand, May* 6, 1843.

312. *Note on a new British Lichen.* I wish to communicate to botanists by 'The Phytologist,' the discovery of a lichen new to the British Isles, namely, the Lecidea Wahlenbergii of Acharius, which I found on Ben Nevis, Inverness-shire, last July, upon the west side of the mountain, about three parts up, above Loch Nevis. This will be a very interesting addition to the next edition of the 'British Flora.'—*Fred. Bainbridge ;* 2, *Beulah Place, Harrogate, Yorkshire, May* 8, 1843.

313. *Note on Bryum androgynum,* Hedw. As the time of fruiting is not stated in the description of this moss in 'English Flora,' and it appears from the remark—"Fruit —— ? very rare,"—to be of unfrequent occurrence in a fertile state ; I have thought that a notice of its discovery with capsules near London, would not be unacceptable to some of your readers. I found it in the early part of last April, with fruit not quite mature, growing on a shady bank on the south side of Abbey wood, near Erith, Kent, but in small quantity. Within a few feet was Tetraphis pellucida, also in fruit. — *W. Mitten;* 91, *Blackman St., Boro, May* 8, 1843.

314. *Note on Centranthus Calcitrapa.* In your September No. (Phytol. 309) appeared a critique by Mr. Babington, on some of the contents of the last Edinburgh Catalogue of phænogamous plants. Among other subjects, allusion is made to Centranthus Calcitrapa, in the following words:—"This has but slender claims to be considered a British plant, as it has only been found, in a naturalized state, at Eltham (?) in Kent." I do not presume to question the opinion of this eminent botanist, as to the slight claims possessed by this plant to rank among our native productions. The note of interrogation probably implies a doubt as to the exact locality in which the plant

has been found; I have therefore to inform your readers, that I met with it growing abundantly on the walls of Eltham church-yard, Kent, and on the walls of several gardens to the east of the church, about the middle of last June. After reading Mr. Babington's remarks on the subject, I went again to Eltham, in order to trace out, if possible, the source from whence this plant found its way to the above station. A gardener, of many years' standing at Eltham, had often seen it growing there, on walls, and had sometimes known it to spring up, self-sown, in gardens near the old palace; but was not aware that it had ever been cultivated in any gardens adjoining the church. Its inconspicuous size would not render it a very great favourite for the flower-border. He thought it likely that it might have been cultivated in a botanic garden, which long ago existed near the church; and that it might have escaped thence to the neighbouring walls. It is noticed in the 'Flora Metropolitana,' as being found on old walls at Eltham, on the authority of Mr. Wm. Pamplin. I accordingly wrote to Mr. Pamplin about it, and give the following extract from his prompt and obliging reply. "It is at least twenty years ago when I first gathered the Valeriana Calcitrapa at Eltham." "It was to Mr. Hewett C. Watson's Botanical Guide that I communicated the particulars above referred to, and I suppose it was from thence copied into Cooper's 'Flora Metropolitana.' In my communication to Mr. Watson's Guide, I ventured to suggest that this plant (so admirably adapted, with its feathery wings, for dispersion) might have escaped from Sherard's botanical garden at Eltham, originally, which I still think was most likely the fact." At any rate, whether indigenous or not, or whether likely or not to become extensively disseminated, it is a pretty and interesting little plant, and worthy of a place in the herbaria of our metropolitan botanists; who will, I have no doubt, if they extend their excursions to Eltham, find it very plentiful on many of the old walls near the church.—*Wm. Ilott; Bromley, Kent, May* 10, 1843.

315. *On the habitats of Equisetum fluviatile.* We have now before us two accounts of the habitats of Equisetum fluviatile; and as the two are so much at variance, and as it appears to me that the habits of that plant are not well understood, I hope I shall not be thought presumptuous in offering a few remarks on the subject. In the first place, Mr. Newman tells us that the plant "affects loose gravelly and sandy places, unconnected with water," (Phytol. 533). In the second place, Mr. Watson states, that so far as his observations go, when the plant grows in corn-fields and other places out of water, it is always

short and stunted; on the other hand, he says that the finest examples he has met with, were in the counties of Chester and Lancaster, "*growing on the red marl*," (Id. 588). Mr. Watson also relates some strange tales about the Cheshire horses getting "bogged," in their endeavours to graze on the plant; and that he (Mr. Watson) has seen a horse almost over head in mud, in a small pond (perhaps a mud-pond) filled with the tall horse-tails. I do not wish to contradict Mr. Watson, but merely to say that *water* or *mud* is not essential to the luxuriant growth of Equisetum fluviatile. At Broad-bank, four miles from Coln, in Lancashire, in a plot of ground which is appropriated to the growth of potatoes, we have the plant growing much higher than the fences. At Midge Hool, near Todmorden, we have it growing very fine, in a wood. And I think I shall be correct in saying, that the plant is not common in the ponds in Lancashire, as I have been in the habit of visiting them for the last sixteen years, and never met with it in any of them. In the Manchester Flora, it is said to grow in "moist woods and hedge-banks, common." In the Yorkshire Flora there are four stations for E. fluviatile,—two of them in woods, and one of the others by a road-side. Francis observes that "the name *fluviatile* is not so applicable to this species as it would have been to some of the others, as it is rarely found on the banks of rivers or in ponds, nor do I remember ever having seen it growing in water." Withering, Smith and Hooker, say the plant grows on the banks of rivers, lakes, &c. Something might be said on the red marl, but as 'The Phytologist' is no medium for Geology, I will omit that altogether. How far Mr. Watson may be correct when he says that horses will go almost over head in *mud* to get at the plant, I know not; all that I can say is, that so far as my own observations go, horses will not eat the plant at all, if they can get anything else. I have never met with the fronds injured by horses, though growing in fields where they frequently feed. Lightfoot states, on the authority of Haller, that the plant was eaten by the Romans; he also tells us, on the authority of Linnæus, that horses refuse it. As Mr. Watson's is the first account we have, by British writers, of E. fluviatile growing in water, it would be well if he could give us a description of that part of the stem which grows *under* water. — *Samuel Gibson; Hebden Bridge, May* 10, 1843.

316. *Note on Geranium nodosum.* Mr. Watson still leaves undecided the question as to whether a Geranium which he has in his herbarium was gathered wild near Halifax, (Phytol. 588). In reply to that question I would say, that if the plant be one which *I* sent to

Mr. Bowman, it was gathered wild something less than two miles from Halifax, and is CERTAINLY *G. pyrenaicum*. The specimen I now enclose is the same as the one I sent to Mr. Bowman; and if that gentleman sent Mr. Watson some other, I know nothing of it. The specimen sent will serve to show how far I am correct in the name. After what has been said on this subject, it will be clearly seen that there is some mistake concerning this Geranium, but the question is, who is to bear the blame? Whoever may have made the mistake, I think Mr. Watson did wrong in publishing it, since he received the specimen under the name of *G. pyrenaicum*, and published it under that of *G. nodosum* in the first part of the New Guide, p. 278. In the second part, at p. 652, he says, "but I entertain scarcely any doubt as to the species;" and in 'The Phytologist,' p. 589, he says, "I THINK it G. nodosum." By this it will be seen that Mr. Watson does not know the plant, neither can he read the label, and therefore I think he ought not to have published it.—*Id.*

[It is evident that there is some mistake connected with the specimen of Geranium nodosum in Mr. Watson's possession, which it will now be difficult, if not impossible, to clear up. The specimen accompanying the above communication, is decidedly one of G. pyrenaicum; and it is labelled — " Geranium pyrenaicum. Washer-lane, near Halifax, 1830."—*Ed.*]

317. *Note on the Viviparous Grasses.* I am glad to see the subject of viviparous grasses taken up by Mr. Grindon (Phytol. 584), and will now give him the result of my observations on the Festuca vivipara of Smith. I have often been told that at a certain height upon our Yorkshire hills Festuca ovina is changed into the F. vivipara of Smith; and that Smith's F. vivipara is only a variety of F. ovina: this change, I was told, is effected by the damp atmosphere causing the seeds to germinate in the husk, before they fall to the ground. It had long puzzled me to know how it happened that the grass did not return to its natural form when growing at a lower elevation, as I have seen it cultivated in a garden for more than twenty years, and still retain its usual character—that of producing young plants instead of seeds. In June, 1842, I visited one of these hills (Fountains Fell) for the purpose of examining this grass; but on arriving at the place I did not find *all* the F. ovina changed into vivipara, but, on the contrary, there was an abundance of both, each retaining its usual character. Here I was under a second embarrassment, how to account for all this; however, I set to work, and got a number of specimens of F. vivipara and examined them, but not a single perfect flower was to be found: not one of those I examined had even the inner glume of the corolla,

and seeds were out of the question, as there were no organs of reproduction. I then collected a number of F. ovina, to try if I could find any of the flowers of that grass in a viviparous state; and after I had examined them on the spot, I gathered specimens and brought them home, and examined them more minutely. This investigation convinced me that the two grasses are abundantly distinct, but how far they may be considered species, I shall leave to the better judgement of others. The two plants may be distinguished by the outer valve of the corolla of F. vivipara (when present) being more strongly ciliated on their edges, and, as Smith says, "keeled" on the back, not cylindrical as in F. ovina. The calyces are also strongly ciliated on their edges in F. vivipara, while, in F. ovina, they are, as Hooker describes them, subglabrous. I now enclose a specimen of each, and, by comparing them you will be able to see the difference.—*Id.*

318. *Note on Linaria Bauhinii.* It may be interesting to some of your readers to know that Linaria Bauhinii grows plentifully on the rocks of Coniston-water. It was discovered by John Roby, Esq., of Rochdale, in 1841.—*Id.*

319. *Note on Viviparous Grasses, &c.* I imagine that Mr. Grindon (Phytol. 584) takes the exception for the rule, in the matter of the viviparous grasses. That Festuca ovina, ε. *vivipara*, produces heads of young plants, is certainly true, indeed, if such were not the case, I do not see why it should be introduced into lists as a *variety;* but, that the seeds of grasses do germinate in the husk in wet seasons, I think cannot be doubted, not only from the fact of the viviparous growth constantly taking place under such circumstances, in grasses and sedges also, but that it seems infinitely more probable than a change in the *nature* of the parts concerned. A circumstance came under my notice last year, which illustrates the effect of moisture on seeds while still in the seed-vessel. I collected some specimens of Drosera rotundifolia in flower, on Wimbledon common, and placed them in a Ward's case. The plants throve, and some time after I noticed on one of the heads, among the withered petals, a small green body. I watched this from day to day; two cotyledons were gradually protruded from the capsule, and at last a leaf, having the peculiar circinate vernation. The little plant then withered away, of course for want of nourishment, Nature not having intended Drosera for an aërial plant:—whereas if it had been part of the original plant, there is no reason why it should not have gone on producing leaves, since it was not interfered with in any way. I may mention that it was in a small case, and kept very wet. It is, however, quite worth while to settle the point concerning *grasses*, by *facts;*

and I shall be happy to communicate anything bearing on Mr. Grindon's question, which may come under my notice.—*Arthur Henfrey; Bot. Soc. London, May* 12, 1843.

320. *Note on a Locality of Equisetum fluviatile.* In my Reigate Flora I have recorded a single station for this plant, "on Reigate Hill, south side of the Wray lane, far from any water." This lane branches off from the Brighton road through Croydon and Reigate, at the turnpike-gate on Wray common, perhaps a mile and a half north-east of the latter town, and, after a gradual ascent in a north-westerly direction, joins the Brighton road through Sutton on the top of Reigate hill. Many years ago, the late Alderman Waithman, who then had a country house on Wray common, opened a pit close to Wray lane, on its south side, for the purpose of quarrying the upper green-sand, which was sent to London to be used as hearth-stone. After a short time, from various causes, the quarry was abandoned, but not until a high mound of loose sandy rubbish had accumulated at the entrance. About the year 1836, when I visited Reigate after a few years' absence, I found this mound covered with a most luxuriant crop of Equisetum fluviatile, looking like a fir-wood in miniature; the plants were two and three feet high. The locality is a very dry one; the nearest water is the large pond in Gatton park, and that is quite half a mile distant, and considerably below the spot in point of elevation. I do not remember having met with this plant in or near water, but Mr. Ilott has recorded a locality at Norwood, where it grows on a bank "and about a small pond close by," (Phytol. 295). — *Geo. Luxford; 65, Ratcliff Highway, May* 15, 1843.

321. *On the arrangement of a Herbarium.* Excellent as my friend Mr. King may find his plan for the arrangement of a herbarium (Phytol. 585), prejudice in favour of a different one makes me think it open to one or two objections; and as it is highly desirable that a collection should be commenced upon a good system, inasmuch as changing it afterwards is attended with much inconvenience, allow me to suggest the following plan to your correspondent. Let every species have a separate folded sheet of white paper, and each genus a sheet of folded blue,* placing the former inside the latter, like drawings in a portfolio, all the creases or folds of the sheets being to the left hand. The name of the genus should be written on a slip of white paper, and pasted near the fold of the sheet, at equal distance from top and

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* The exact size is immaterial, but it should not be smaller than foolscap nor larger than double folio post, which is ample, under skilful management, for any plant, to say nothing of the expense and unwieldiness of very large paper.

bottom. If *printed* labels are used, so much the better. By this means a genus can be found immediately, it being merely necessary to raise the sheets *seriatim* at their folds, with the fingers of the right hand, and glance over the labels. The names of the species should be written on the corresponding part of the white papers, which can be run through in the same way as the blue ones, when a particular plant is wanted; and thus we are never under the necessity of opening several papers when but one is required, nor liable to have the attention diverted from the object in view. The genera may be grouped together in sections, classes, or natural orders, according to the taste of the owner. Where British plants only are collected, the Linnæan system is unquestionably the better one to follow; but for the more extensive herbaria, which contain both indigenous and exotic plants, the natural arrangement* is decidedly preferable. The groups of genera should be tied together in fasciculi, a piece of stout blue pasteboard, an inch larger each way than the papers, being placed both at top and bottom, and *broad* white tape used for tying, to prevent any danger of cutting either paper or pasteboard. On the upper pasteboard should be fastened a slip of paper, containing the names of the orders, classes or genera comprised in the fasciculus. If there are *several* orders in the fasciculus, which it may be desirable to keep separate, pieces of thinner pasteboard may be used for that purpose. By giving a whole sheet to a species, any number of specimens may be successively introduced on *half sheets*, without intruding on space that can ill be spared, as must be the case in a *book* of limited size; for surely no modern botanist is content with a single specimen of any plant, and that probably only in flower. In a good collection, not only is the *fruit* necessary, but, in many cases, the *foliage* in its different stages or conditions. Of Tussilago Farfara, for instance, five or six specimens at least are necessary to illustrate the plant; and with regard to trees, a much larger number is requisite. I possess a series of Fagus sylvatica, comprising about twenty specimens, the first showing the expansion of the leaf-buds, and their beautiful rosy perules, and the last the ripe fruit, and yet am incomplete as regards many of the intermediate stages. In ferns, grasses and Carices, the necessity of numerous specimens is too obvious to be urged upon any one. Now the constant accumulation of specimens, independently of species, surely must be sadly at variance with such a plan of arrangement as Mr. King's; whereas by tying them in fasciculi, as above described, all that is required is white paper in half sheets, and tape to meet the increase of bulk. The present plan is, moreover, so compact, and the fasciculi are so mathematically uniform in superficial measurement (that is, if a little dexterity and judgment are used in the mounting, so as to let the thick heads of thistles, for instance, lie in the corners of the papers), that they will lie upon each other like folio volumes. Another advantage over the book system is that a series of genera and species can be taken out and laid side by side for comparison, and be easily replaced when done with. If I rightly understand Mr. King's method, the latter does not admit of this; at all events, it cannot be practised with equal facility. Where a cabinet, purposely constructed for holding plants, is possessed, of course tape and pasteboards are not required, the papers lying loose on their respective shelves. In this case I would, nevertheless, still pursue the plan of having genera and species in separate blue and white papers, as above described.—*Leo. H. Grindon; Manchester, May* 16, 1843.

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* As given, for instance, in Hooker's edition of Smith's 'Introduction to Botany.'

322. *Mr. Babington's 'Manual of British Botany.'* We regret that we can do no more in the present number than announce to our readers the appearance of the above work, which we anticipate will ere long become the text-book and travelling companion of every British botanist. The generic and specific characters are of necessity condensed; but, judging from our hasty glance through the book, they appear to be clear and explicit, and are evidently drawn up with constant reference to the most recent information contained both in continental works of standard authority, and the British scientific journals. We must defer a regular notice until next month.—*Ed.*

ART. CXLIX.—*Proceedings of Societies.*

BOTANICAL SOCIETY OF LONDON.

May 19.—J. E. Gray, Esq., F.R.S., &c., President, in the chair. Donations to the library were announced from the American Academy of Sciences, Philadelphia, from the President, from Col. Jackson, Mr. Hogg, and Mr. E. Doubleday. British plants had been received from Mr. Edwin Lees and Miss Twining; and a collection of specimens from Western Australia, was presented by Mr. John Turner. Mr. William Andrews presented specimens of varieties of Saxifraga Geum, collected at the Great Blasquest Island, coast of Kerry, Ireland, one specimen of which had the nectaries thickly surrounding the ovary. Mr. A. Henfrey exhibited specimens of Leucojum æstivum, collected in Greenwich marshes. He also presented specimens of Dentaria bulbifera, collected at Harefield, Middlesex.

The following papers were read. "Notice of the discovery of two new species of British Fungi," by Dr. Philip B. Ayres: — Peziza corticalis, found on woodbine, between Stokenchurch, Oxfordshire, and Cadmore End: Hystericum rubrum, found on bean-stalks at Aston-Rowant and Tetsworth, Oxfordshire. Specimens were presented by Dr. Ayres. 2. "On the Groups into which the British Fruticose Rubi are divisible," by Mr. Edwin Lees, F.L.S., &c. This paper (which was illustrated by specimens and drawings) will be concluded at the next meeting, when a full report will be given.—*G. E. D.*

MICROSCOPICAL SOCIETY OF LONDON.

May 17.—J. S. Bowerbank, Esq., F.R.S. in the chair. Read, a paper from E. J. Quekett, Esq., "On the Nature of Vessels possessing longitudinal as well as spiral Fibres." Mr. Quekett stated that these vessels are not present in the majority of plants, and consequently have not been described until within the last few years. They have been found in plants belonging to very different orders, by various observers, and it is not improbable that future investigation may detect them in many other plants than those in which they have hitherto been observed. Thus they have been found by Schultz in Urania speciosa, by Mr. W. Wilson in Typha latifolia, in a plant of the gourd kind by Mr. Hassall, and by Mr. Quekett in Loasa and in Canna bicolor. In exogens these vessels do not appear to be either of the length or diameter they are in endogens, in which they seem to constitute the largest and longest of the vessels. In Loasa they do not exceed the $\frac{1}{500}$ of an inch in diameter, while in Urania and Canna they are nearly the $\frac{1}{100}$. In their structure they have a general resemblance to ordinary spiral vessels, having very frequently two or more fibres forming the same screw coiled in the interior of the vessel, as in compound spiral vessels. In addition to this spiral arrangement, there are longitudinal deposits of fibres whose number varies considerably, some vessels not having more than six or eight, while more than double that number may be detected in the larger vessels. Upon applying force, these longitudinal fibres are broken at the same point as the membrane, the broken edges of which project beyond the edge of the spiral ribband to which the vessels are reduced. Their terminations are very pointed, and they are applied to each other for some considerable space. At first Mr. Quekett supposed these vessels to be perfect of their kind, presenting higher marks of development than the true spiral vessels; subsequent observations however have enabled him to discover that a vessel presenting this longitudinal deposit of fibres, is only in a state preparatory to the complete development of a vessel exhibiting oval or quadrangular dots on its parietes: and he observes that although a tendency to produce longitudinal fibres may be seen in other annular and spiral vessels, it is only in the compound spiral that the ultimate conversion of a spiral vessel into one with dots regularly arranged in longitudinal fibres occurs. This is quite in accordance with the observations of Mohl and Schleiden, which prove that the spiral is the earliest type of every other form of vessel, whatever phases they may afterwards assume. He also described the various steps by which the spiral vessel becomes an annular one, and the reticulated vessel one with dots; and showed that the vessels forming the particular subject of this paper, are some of those in progress towards the dotted condition, as in some instances, in Canna bicolor, the various steps of this process can be witnessed in different parts of the same vessel. He concluded with some observations upon the dots on the vessels in woody exogens, showing that these last are of a more complex structure than those formed by the mere rounding of the meshes of the reticulated vessel.—*J. W.*